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Ideology and moral values in rhetorical framing:
How wine was saved from the 19th Century Phylloxera Epidemic

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Abstract

Extant organizational research into crises has focused on the efforts of different actors to defend and legitimate their ideologies towards particular actions. Although insightful, such research has offered little knowledge about the moral reasoning underlying such action. In this paper, we explore how moral reasoning from different ideological viewpoints can lead to polarised debates and stalemate within the context of ecological crises. We apply our conceptual framework in an analysis of the 19th Century French Phylloxera Epidemic (hereafter the Phylloxera Epidemic). Drawing upon this analysis, we argue that, by adapting their moral reasoning, opposing stakeholder groups could maintain their underlying ideology, while at the same time pragmatically changing their actions towards the crisis. We discuss the theoretical implications of our analysis for historical research in organizational studies and research on organizations and the natural environment. (135 words)

Keywords: Ideology; moral reasoning; ecological crises; Phylloxera Epidemic.

Introduction

In the late 19th Century, an epidemic caused by an aphid-like insect known as the phylloxera destroyed two-thirds of all European vineyards, generating profound economic and societal implications. The Phylloxera Epidemic spanned several decades, with the insect arriving in Europe from America in the 1860s. The struggle to save the vine led to a vociferous debate over the cause of, and response to, the epidemic, that involved over 30 years of stalemate and failure before effective solutions could finally be implemented.

On one side, the 'disease as effect' theory was held by the 'Theists', who were mainly comprised of members from the French Academy of Sciences, the Ministry of Agriculture, and the Catholic Church. The Theists reasoned that if the phylloxera was a parasite native to the Americas, American vines would have succumbed long ago (Pouget, 1990). Instead, the Theists believed that it was neglectful farmers who employed expedient farming practices that made their vines susceptible to adverse weather conditions and parasites such as the phylloxera (Gale, 2003).

On the other side, the 'Darwinists' held to the 'disease as cause' theory, whose main protagonists were: Jules-Émile Planchon and his Montpellier colleagues, Charles Valentine Riley, the Missouri State Entomologist, and Charles Darwin, among other notable scientists (Desmond & Moore, 1992). The Darwinists drew upon Charles Darwin's theory of evolution to inductively reason that the host and parasite had co-evolved, resulting in gradual adaptations that afforded American vines relative immunity from and resistance to the Phylloxera.

Examining the debate in more depth, we find that beyond the political efforts of each stakeholder group to define their domination over the other through discourse (Grant & Hardy, 2003; Thompson, 1985), their ideological conflict created a sharp polarisation and thus a delay in deciding how to respond to the crisis. It was through adaptation in their respective processes of reasoning that opposing groups could overcome the impasse and mobilise collective action to develop and implement viable solutions.

Similar to the Phylloxera Epidemic, other ecological crises such as HIV, the Ebola and Zika viruses began as relatively isolated infections but have since evolved into global pandemics (Leach, Scoones, & Stirling, 2010). Although the causes of these crises vary, as do their impact, a

common theme is the role of morality in guiding political choices that ultimately make a difference between societal collapse and sustainability (Diamond, 2006).

Organisational studies into crises have focused on the discursive efforts of different actors to defend and legitimate their ideologies (Boin, 't Hart, & Mcconnel, 2009; Erkama & Vaara, 2010; Mueller, Sillince, Harvey, & Howarth, 2004; Samra-Fredericks, 2004; Wodak, 2015). As yet however, there has been relatively little attention given to the role of morality in these discursive efforts.

In this paper, we build on research into the relation between cognition and language (Johnson, 1994; Lakoff, 2002; Lakoff & Johnson, 1985; Rosch & Lloyd, 1978). We define ideology as a system of frames, with each frame composed of interrelated conceptual metaphors, that actors draw upon to make sense of a situation. This system of frames is mediated through a process of moral reasoning that determines which frames are prioritised and how their constituent conceptual metaphors are applied to specific situations (Johnson, 1994). A conceptual metaphor is a way of conceptualising one domain of experience in terms of another (Cornelissen, 2005; Cornelissen, Holt, & Zundel, 2011; Morgan, 1986; Tsoukas, 1991) – for example conceptualising the moral act of 'reciprocation' through the economic concept of 'debt' (e.g. 'I owe someone gratitude'). Thus, actors do not act based on a fixed set of moral laws, but rather they morally reason, through frames and conceptual metaphors, how to act in a given situation. From this, we develop a framework, which helps us to understand the relationship between ideology, moral reasoning and how different stakeholder groups frame ecological crises.

The key contribution of this paper is to extend our current understanding of how different groups frame a crisis based on their ideology, by emphasising the role of moral reasoning in this process. Past research has discussed the concept of morality, but only as part of rhetorical strategies of legitimation, whereby actors invoke emotive moral claims to appeal to human concerns (Erkama & Vaara, 2010; Vaara & Tienari, 2002), and to express emotion or 'move an audience' (Samra-Fredericks, 2004). Although these studies illuminate how moral claims can move communicative action, it has not offered a deeper analysis of the underlying reasoning upon which these claims are arrived at. We argue that identifying and examining this process of moral

reasoning, will enable a deeper understanding of the ideologies of opposing groups, as well as their political choices of action during a crisis.

Furthermore, we contribute to research on organizations and the natural environment (ONE) (Jermier & Forbes, 2011b; Kallio & Nordberg, 2006) by providing rich insights into historical studies of ecological crises. The ONE literature has repeatedly highlighted the anthropocentric and denatured discourse of organizational studies, arguing for a more ecocentric discourse with which to understand the relationship between organizations and the natural environment (Hoffman, 1999; Jermier & Forbes, 2011a; Shrivastava, 1994; Waddock, 2011). This literature tends towards normative suggestions which typically propose that as 'stakeholders of the earth… with the capacity to act with intelligence, humans could conceivably do so with the interests of other living beings, ecosystems, and future generations in mind' (Waddock, 2011: 15). Using stakeholder theory as a perspective, such research views the natural environment as another stakeholder on the grounds of 'fairness': managers need to consider their organization's impact on the environment (see Phillips & Reichart, 2000). We argue for the need to go beyond such normative suggestions, and to explore the processes of moral reasoning upon which the natural environment is indeed considered as another stakeholder in the frames of opposing stakeholder groups. As we explore in our analysis of the Phylloxera Epidemic, it was the persuasive frames of the Darwinists and the persistence of the phylloxera in resisting eradication efforts that eventually led to the Theists' acceptance that the vines and the insect had to coexist. However, we argue that by better understanding the moral reasoning that informs such frames, crises might be resolved in favour of more sustainable trajectories.

In the following sections, we begin by reviewing the organizational literature on ideology and develop links to framing and moral reasoning. Next we discuss our methods for data gathering and analysis, and explain how we derived the categories in our conceptual framework. We then present our findings and analysis of the Phylloxera Epidemic, and conclude with a discussion of our analysis and the implications it has for further research.

Extant Research on Ideology and Framing

Extant research has defined ideologies as 'the basic frameworks for organizing the social cogni-

tions shared by members of social groups, organizations or institutions' (van Dijk, 1995: 248). They are 'an action-oriented system of beliefs' (Bell, 1962: 400) which functions as the interface between the cognitive structures underlying language and action, and the societal position and vested interests of social groups (Fairclough, Mulderrig, & Wodak, 2011; Purvis & Hunt, 1993; Wodak, 1989). Cognitive structures and processes include the sociocultural knowledge and beliefs, shared by a social group. For example, feminists may share beliefs about abortion, corporate glass ceilings blocking promotion, and other manifestations of systemic discrimination. Such beliefs are not only internally structured within the social group, but also externally structured in relation to the societal position of the social group against other groups. Similar examples may be given for racist vs anti-racist, and corporate vs ecological ideologies. Such ideologies are usually constructed through long-term processes of socialisation, by which a group gradually selects and retains relevant social norms (van Dijk, 1995, 2006).

This view is consistent with the perspective on ideologies as the 'deep structures' that exist in actors' cognitive maps, which actors instantiate through drawing on them in their daily practices (Barrett, Heracleous, & Walsham, 2013; Heracleous, 2006; Heracleous & Barrett, 2001). These studies highlight that, 'ideologies are at an elemental level expressed discursively… [and] the rhetorical elements that lie at the heart of ideologies frame how issues are interpreted and acted upon' (Barrett et al., 2013: 204). In other words, the relationship between ideology and discourse emerges through the political efforts of one social group to define their domination over others by using different frames (Grant & Hardy, 2003; Thompson, 1985).

While extant organizational research explores how different actors formulate frames to defend and legitimate their ideologies, our understanding of the process that intertwines the instantiation of ideologies from framing to action remains incomplete. For instance, previous research has argued that the links between ideology and discourse can be explored in terms of identifying enthymemes (Heracleous & Barrett, 2001), rhetorical strategies (Suddaby & Greenwood, 2005) and discursive legitimation strategies (Erkama & Vaara, 2010), among others – thereby explaining the instantiation of ideology through communicative action.

While supporting such research, in the next section, we draw upon, and extend, the work

of Johnson (1994) and Lakoff (2002), to argue that social groups use processes of moral reasoning to instantiate their ideologies.

Ideology and Moral Reasoning

Morality has been traditionally viewed as a system of laws or precepts, whose purpose is to differentiate actions, intentions and decisions between those deemed as proper versus those that are judged as improper (Williams, 2006). This view has origins in Judeo-Christian traditions and has emerged from universal principles of human reason (Donagan, 1979; Kant, 1996). More recent studies on cognition and language, however, have begun to change our understanding of morality. Rather than comprehending morality as a fixed set of laws that need be interpreted to judge a particular situation, this research points to morality as the outcome of an embodied and cognitive process of reasoning (Johnson, 1994).

Although the cognitive approach agrees with more traditional approaches to morality, insofar as that humans generally possess an innate sense of right or wrong, they diverge in their respective explanations of how we interpret and respond to situations of moral ambiguity. Moral philosophers (e.g. Donagan, 1979; Gerwirth, 1982; Rawls, 2009) broadly agree that we use precepts (e.g. 'thou shalt not steal') – in other words concepts that are understood as possessing a defining set of essential characteristics (e.g. Was the theft intentional? Did the object belong to someone else? Was harm caused?) to evaluate whether specific situations such as shoplifting or even insider trading can be categorised as theft. Instead, cognitive research increasingly supports the idea that our understanding of concepts is anchored in prototypes, and that we interpret situations in relation to those prototypes (Geeraerts, 2006; Rosch & Lloyd, 1978; Taylor, 2003). Thus we understand a concept such as 'theft' in terms of a central prototype (e.g. violent mugging, bank robbery, etc.). We evaluate the categorical validity of non-prototype and therefore ambiguous cases (e.g. shoplifting, insider trading, etc.) as a gestalt based on a holistic evaluation of 'family resemblances' rather than a list of necessary and sufficient conditions (Wittgenstein, 1967). This process by which we draw correspondence between these prototypes and non-prototypical instances is metaphorical in nature (Lakoff & Johnson, 1985). One common conceptual metaphor we all use on a routine basis is that of 'Well Being as Wealth' to draw correspondence

between the moral concept of 'well-being' and the economic concept of 'wealth'.

While we understand and make use of a great number of concepts on a regular basis, we necessarily prioritise certain systems of concepts to act upon in a given situation. Such systems of concepts are defined as frames (Allan, 2001). The process by which we select frames (i.e. prioritise one frame over another) and the metaphorical drawing of correspondence to the prototype in our attempt to comprehend and respond to a specific situation is defined as moral reasoning (Johnson 1994). While in the majority of situations we encounter, the selection of frames and activation of constituent metaphors is reflexive and unproblematic because the situation is close to the prototype, in situations that are non-prototypical we must determine a correspondence with the prototype, and if unsatisfactory, adjust an existing frame (Johnson, 1994). Therefore, the way by which we judge right from wrong and proper from improper, emerges not from the explicit interpretation of a set of moral laws, but rather a cognitive process of moral reasoning through frames and conceptual metaphors. While moral reasoning begins in individual cognition, its translation to action is also a collective social process (Hargrave, 2009) that is manifest as ideology.

To begin to identify the frame choices of different social groups, Lakoff (2002) has argued that we should examine their processes of moral reasoning by starting with the conceptual metaphor that those groups commonly use to frame their actions. Lakoff illustrates this through an analysis of the ideologies of conservatives and liberals in American politics, by examining their moral reasoning over different social issues. Conservatives and liberals exist in both the Democratic and Republican parties, exemplifying that there are often ideological variations in the same party. Lakoff uses the common conceptual metaphor of the 'nation as family', with the government conceptualised as the parent and the citizens as children, to demonstrate the differences between the conservatives' and the liberals' processes of moral reasoning and how those processes influence the framing of particular issues (e.g. abortion).

According to Lakoff (2002), conservatives have an ideology based on a Strict Father model of the nation as family. This model posits a traditional nuclear family, with the father (i.e. the state) having primary responsibility for supporting and protecting the family as well as the au-

thority to set overall policy, to set strict rules for the behaviour of children (i.e. the citizens) and to enforce rules. Children must respect and obey their father, because by doing so they build character. Self-discipline, self-reliance and respect for legitimate authority are crucial for the development of children and for their survival when they mature. Liberals however, have an ideology based on the 'Nurturant Parent' model of the nation as family. Love, empathy and nurturance are primary because 'children become responsible, self-disciplined, and self-reliant through being cared for and… caring for others' (Lakoff, 2002: 108). The obedience of children comes out of their love and respect for their parents and community rather than fear of punishment. 'The principal goal of nurturance is for children to be fulfilled and happy in their lives' (Lakoff, 2002: 109). Raising a child to develop their potential for achievement and enjoyment, entails respecting the child's own values by allowing them to explore the range of ideas and options that the world offers.

From this analysis, Lakoff demonstrates how, both the conservatives and liberals draw on the common conceptual metaphor of nation as family to reason that the system of concepts (i.e. frame) around citizenship (childbearing) will be reproduced in the citizen (the child). The concepts in each model are reflected in the other model, but with greater or lesser priority. For example, moral strength appears in the Nurturant Parent model, but it functions not for its own sake but rather in the service of nurturance. Also, nurturance appears in the Strict Father model but functions only as a consequence of parental authority. Lakoff (2002) defines three conditions for differentiating between (opposing) ideologies, their distinct systems of concepts, and how those are framed in communicative actions.

First, each ideology should offer distinct explanations of why certain beliefs on issues go together (e.g. gun control goes with social programs goes with pro-choice goes with environmentalism). Lakoff (2002) argues for the need to focus on conceptual metaphors as a way of identifying opposing ideologies, something which has already been proposed in organizational research (Heracleous, 2006; Oliver & Johnston, 2000). The key difference, as noted earlier, is that by focusing on common conceptual metaphors, research should examine how different systems of concepts are mediated by the processes of moral reasoning of each group. Such research, we

argue, requires a historical analysis of the socio-cultural context within which common conceptual metaphors are employed to frame various issues and actions. We come back to this point below.

Second, each ideology should offer distinct explanations of why the moral paradoxes of one social group (e.g. how can conservatives advocate right to life by being against abortion yet be in favour of capital punishment?) are non-paradoxical for another social group (e.g. how can liberals favour the rights for children when they champion the rights for criminals such as convicted child molesters?) and vice versa. While previous organizational research has broadly defined morality as 'rules of the game' for what is considered appropriate in a given organizational setting (Alvesson & Wilmott, 2002), we propose looking beyond a fixed set of laws or norms to more explicitly analyse the cognitive processes of moral reasoning of opposing ideologies.

Lakoff's final condition is that each ideology should exhibit distinct choices in topics, words, and forms of reasoning in framing (e.g. in conservative discourse 'progressive taxation' proposed by liberals is framed as 'theft'). Thus, research examining the relationship between ideology and morality should start with the communicative actions between different social groups. Previous organizational research has exemplified such an approach (Erkama & Vaara, 2010; Mueller et al., 2004; Samra-Fredericks, 2004).

In considering the applicability of these conditions in the study of ecological crises, we found that some theoretical issues needed to be addressed. Specifically, Lakoff (2010) explains that ideological divisions can be overcome through new mutually acceptable frames, for example achieving legislative compromise between liberals and conservatives by redefining the problem of 'global warming' as 'climate change'. This explanation, however, falls short in explaining the shift of frames that is characteristic of long-term historical cases. If ideologies are relatively stable cognitive constructs that are widely shared by social groups, how do communicative actions, that are instantiations of those ideologies, evolve over time or between different generations of a social group at the same time? A further problem with attributing the difference between ideological deadlock and detente as the absence of mutually acceptable frames is that it leads to a conflation of ideology and the process of moral reasoning. Such conflation leads to the portray-

al of individuals as 'cultural dopes' (Garfinkel, 1967) incapable of reflexively negotiating actions necessary to cope with a crisis.

The aforementioned issues suggest that further theoretical work is needed (Smith & Lewis, 2011; Van De Ven, 1986) to resolve this apparent conflation between ideology, the process of moral reasoning and communicative action. In response to the first issue, we propose that history should endeavour to be more than a chronological summary of events, rather it should afford the ability to discover and document the shift of frames over time (Lowenthal, 1985). In response to the second, we propose that frames can be adjusted and re-prioritised over time and in relation to critical events through a renewed process of moral reasoning. This helps to explain why, although ideology remains relatively stable, frames can shift as a consequence of different concepts gaining higher priority in response to key historical developments.

We therefore use Lakoff's conditions and our extensions to those as analytical starting points for our study of the 19th Century French Phylloxera Crisis – an inquiry guided by the question: *What is the dynamic between ideology and moral reasoning, and how does that dynamic inform how stakeholders understand and respond to an environmental crisis?'*

Methods

The Phylloxera Epidemic destroyed two-thirds of all European vineyards in the late 19th Century. This ecological crisis, which spanned several decades, was marked by many critical events, documented through contemporaneous texts including periodicals and official reports, as well as recent histories, which we drew on to carry out our analysis. To achieve a balance between intuition and early pattern recognition (Weick, 1989) and analysis (Glaser & Strauss, 1967), we engaged in a staged approach in order to improve the accuracy and generalisability of our interpretations. The stages of our analysis follow the conditions for differentiating between (opposing) ideologies, their distinct systems of concepts and the ways those are framed in communicative action as discussed in the previous section.

Historical Analysis of Critical Events of the Crisis & the Common Conceptual Metaphor Used by Different Stakeholder Groups

Given that a grounded analysis of all data was beyond the bounds of what was rationally possible due to the complex nature of the crisis (Pettigrew, 1990), we began with recent histories to provide a broad overview and focus for our search efforts. Recent histories can unearth new facts to improve the veracity of our interpretations (Hargadon & Douglas, 2001) and provide greater contextual understanding (Golden, 1992) with which to judge the repercussions and ramifications of those choices. These recent histories emphasised perspectives that included: general history (Campbell, 2004; Garrier, 1984, 1989; Ordish, 1987); economic geography (Stevenson, 1980); and scientific history (Gale, 2003, 2011; Sorenson, Smith, Smith, & Carton, 2008).

From these sources, we synthesised a broadly inclusive meta-account of how the crisis unfolded through a series of critical events. A 'temporal bracketing strategy' (Langley, 1999) was used to organise this meta-account into temporal periods to enable examination of how the actions of a previous period led to changes in context that influenced the actions of subsequent periods (e.g. Barley, 1986). The crisis was identified as consisting of five periods which are the: i) pre-crisis, ii) emergence of crisis, iii) search for solutions, iv) implementation of solutions, and v) aftermath of crisis.

This analysis revealed a pattern of strong polarisation with relatively stable configurations of constituent stakeholder sub-groups over time. We termed these two groups, the Theists and the Darwinists. The two groups can be distinguished in relation to their approach in interpreting what caused the crisis. On the one hand, the Theists adopted a 'disease as effect' theory, reasoning that if the phylloxera was a parasite native to the Americas, American vines would have succumbed long ago (Pouget, 1990). Therefore, it was neglectful farmers who were culpable by employing expedient farming practices and making their vines susceptible to adverse weather conditions and parasites such as the phylloxera (Gale, 2003). On the other hand, the Darwinists adopted a 'disease as cause' theory, reasoning that the host and parasite had co-evolved, resulting in gradual adaptations, which afforded American vines resistance to the Phylloxera.

Theism represented the ideology of the scientific and professional establishment led by the Academy of France, the French Ministry of Agriculture, the French Catholic Church, and

large commercial wine viticulturists, who were largely based in the National capital of Paris. Darwinism represented the ideology of, what was initially, a small and disregarded scientific group influenced by the then recent theories of Darwin, Lister, Pasteur, and others. This ideology also came to be held by small family viticulturists, who were centred in Montpellier, the capital of the Midi[1] wine growing region and the epicentre of the epidemic. Figures 1a and 1b illustrate a timeline of the Phylloxera epidemic as it unfolded between these opposing ideologies through critical events that marked the struggle to make sense of, and then respond to the epidemic.

Figures 1a and 1b about here

We then examined the evolution of major French institutions such as the Catholic Church (Ford, 2005) and the body politic (Weber, 1979, 1991). Further accounts (Barthes, 1983; Echikson, 2005; Fourcade, 2012; Pitte, 2008; Simpson, 2011) granted us a more nuanced understanding of the economic, cultural and regional variation of the wine industry, thus sensitising us to the ideological importance of wine in French culture – both of regional differences and common national values. Biographies and accounts of several key scientific figures such as Pasteur (Latour, 1988) and Darwin (Desmond & Moore, 1992) enabled a better understanding of the tentative nature of new scientific discoveries (e.g. germ theory of disease) and technological innovations of the period (e.g. steamships, agricultural technologies, etc.) and then followed their development as paradigms over the period of the crisis.

By iterating between our contextual understanding and the conceptual metaphors that characterised the Theists and Darwinists, we concluded that the common metaphor used by both groups was 'wine as a form of identity construction'. The various debates between the two opposing ideologies could be seen as frames that were based on this common conceptual metaphor. The initial debates, which concerned the cause of the epidemic (i.e. theories of disease as 'cause' vs 'effect'), became implicated in the ideologically-rooted conflict over the present plight of post-Napoleonic France. The latter debates, concerning the response to the disease (i.e.

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[1] *'Le Midi' is term which literally means the position of the midday sun - a colloquial Paris-centric term used to describe the provincial departments of southern France.*

approaches of 'adaptation' through grafting vs maintaining 'purity' through eradication), were also a reflection of the Theists' angst over projections of possible futures for French identity, and the Darwinists' construction of human identity in relation to other species in the natural environment. From this we determined the two respective variations on the common conceptual metaphor 'wine as identity construction' could be distinguished as 'wine as progression' and 'wine as tradition' (see Table 1, upper section).

Prioritizing Different Frames through Moral Reasoning

Having now established the differences between these opposing ideologies, we returned to contemporary accounts of critical events (e.g. editorial articles, news reports, official papers, etc.) to understand the process of moral reasoning of each stakeholder group. For example, in working iteratively between the main theories with which the Darwinists and Theists' explained the problem, namely 'disease as cause' versus 'disease as effect', it was possible to inductively extend our understanding of the processes of moral reasoning within these two respective ideologies.

The Theists' initial view of the insect as 'insignificant' was possible if understood within a broader struggle between 'good' and 'evil', with one's relative moral authority depending upon one's relative position within a hierarchy of nature under humans, and humans under god. By contrast, the Darwinist position could only be reconciled through an understanding of the world as a complex ecosystem of many diverse and competing species, whose continued survival within that ecosystem was determined not by moral authority, but rather by their 'fitness' in adapting to the contingencies of that environment. The Darwinists saw change as necessary for a species to adapt to a changing environment and therefore proposed a solution that would enable the vines to quickly adapt to the Phylloxera. The Theists however, saw the world through the perspective of hierarchical structures earned through righteousness and moral rectitude, and thus a strong interest in maintaining those structures.

In our analysis of the frames used by members of these opposing groups were notable for several key differences. For example, in describing the role of viticulturists in the epidemic, the Theists reasoned towards frames premised on concepts of moral intent (e.g. 'good', 'evil', 'laziness', 'neglect') while the Darwinists employed frames characterised by concepts related to

emergence and unintended consequence (e.g. adaptation, modification, context). When the debate turned to the role of the insect, the Theists used frames to downplay its ability (e.g. 'smallness', 'hidden life') or gave it supernatural agency (e.g. 'a plague', 'the evil'), while the Darwinists, particularly in their attempts to describe the insect itself, tended towards frames that granted it anthropomorphic characteristics (e.g. 'good bourgeoisie', 'the Moor') or in familiar terms (e.g. wolves and sheep, caterpillars and cabbages).

From this insight, we further determined 'wine as progression' and 'wine as tradition' as premised upon underlying concepts of structure, essence and agency. 'Structure' refers to the nature of the known world, 'essence' to that which determines the relative positioning within the known world, and 'agency' to the imperative to maintain or improve that relative positioning (see Table 1, lower section). Table 1 represents the most salient aspects of the key concepts of, as well as the crucial areas of disagreement between, the Theists and the Darwinists.

Table 1 about here

Analysis

In this final stage, we conducted an analysis of key texts to determine how the concepts of structure, essence and agency of the Theists and the Darwinists were prioritised over time. In particular, we sought to understand how the Theists eventually came around to seeing Phylloxera as the cause even though they disagreed initially, and how they finally acquiesce to grafting as the solution. Also, we sought to understand why the Darwinists initially proposed targeting the insect but then seized grafting as the solution well before the Theists did.

Here, we synthesised the overall frames of each side with regards to attributing cause and prescribing response at the initial, intermediate and final phases of the crisis, which we show in Table 2. What we found was that the Darwinists' priorities changed little because they remained congruent with the evolving context. As for the Theists however, concepts of structure were prioritised in the initial phases of the epidemic, but as the crisis worsened and the ability to pursue different courses of action dwindled, concepts of structure were backgrounded and concepts of agency prioritised.

These findings allowed us to theorise how different concepts were re-prioritised and actions shifted over time, enabling opposing groups to overcome disagreements. The Theists, influenced by the French Catholic Church and their national pride, reasoned that adherence to the strict hierarchy of moral authority, moral strength through self-discipline, and 'good' character, and the preservations of moral boundaries was the only solution. The Darwinists however, reasoned that the crisis could be resolved by accepting that humans are but another species in the ecosystem, requiring that we and the vine must adapt to changing conditions. Through these underlying processes of moral reasoning, opposing groups prioritised frames with different systems of concepts over time, allowing for the impasse to be resolved.

For the purpose of brevity, we mainly confine our account to the second and third of the five stages of the crisis. Therefore, in the next section, we begin by describing the early stages of the Phylloxera Epidemic, and then explain how hypotheses were developed, positions drawn, and responses proposed. We conclude with an abridged account of how this crisis was eventually resolved – a solution upon which viticulturists still depend upon to the present day.

The Phylloxera Epidemic

The Crisis Begins and Two Opposing Ideologies Emerge

In 1867, a mysterious malady caused the leaves of vines to yellow and their roots to blacken and rot in the village of Roquemaure, near Avignon, with the entire plant eventually succumbing over the next two or three seasons (Campbell, 2004; Gale, 2003). Over successive growing seasons, the progress of this malady was likened to the 'gradual spreading of a spot of oil' (Planchon, 1874: 553) that soon grew into the shape of an 'hourglass' along the Rhône valley. Although the dead vines had roots which were blackened, rotted and knotted with tumours, no direct cause was visible (Garrier, 1989). The local chamber of commerce responded by appointing a commission led by Jules-Émile Planchon, a Botany Professor at the University of Montpellier, to inspect an affected vineyard. Upon accidentally digging up an apparently healthy vine, and discovering its

roots covered with clusters of small yellow aphids, the commission quickly concluded that the insect was the cause of the malady (Gale, 2011).

From these same field reports, the Paris-based scientific establishment concluded differently. The insect was merely a symptom. This divergence in opinion was rooted in two long-standing but competing theories of disease, respectively named 'disease as effect' and 'disease as cause', which had implications for how empirical phenomena were understood. Planchon (1874: 554) summarised the differences as follows:

> ... the role of Phylloxera in the new malady of the vine may be reduced to two: the Phylloxera effect and the Phylloxera cause… According to the first theory, Phylloxera would be the result of enfeeblement… due, according to some theorists, to long-term monoculture, or wrong training of the vine (too short, too long, too severe pruning).

The 'disease as effect' theory viewed the body as a harmonious system with the states of health and disease as the result of systemic balance or imbalance, and was the official doctrine for all biology-based disciplines including medicine, zoology, entomology and botany in 19th France (Gale, 2011; Pelling, 1993). The 'disease as cause' theory however, saw disease as the result of a 'contagion' or 'germs' that infected the body (Cohen, 1961). It was around these two respective theories of disease that, two ideologically opposed camps began to emerge, the Theists and the Darwinists.

Small viticulturists were split over the cause of the disease due to the slow and uneven spread of the epidemic. Lowland vineyards generally succumbed before those at higher elevations. It was not uncommon for some areas to report complete devastation while adjacent areas recorded harvests (Stevenson, 1980). Yet unaffected viticulturists were often skeptical of the Darwinists explanations, thus tending to side with the Theists (Ordish, 1987). A few claimed the Epidemic to be a divine punishment that afflicted the villages of the less pious, with some viticulturists resorting to pagan rituals such as placing crosses of hazel branches to ward off evil (Campbell, 2004) or burying dead toads to draw poison from the vines (Robinson, 2006). For those affected, initially small viticulturists in the Midi, observations of Phylloxera on the roots of dying vines and their absence on the roots of adjacent healthy vines were proof of disease as cause. As the numbers of affected viticulturists in each wine region reached majority however, explanations based on lax morality waned (Garrier, 1989) as they committed to the Darwinist

position.

(Re-)Prioritizing Frames to Contain the Crisis

The Theists were found to be influenced by the French Catholic Church and nationalist pride, as well as the official doctrine of 'disease as effect', dominant in all biology-based disciplines in 19th France (Gale, 1979; Pelling, 1993). The Theists held a hierarchical view of the position of humans in relation to God and nature. The proposition that the Phylloxera could be the cause of the crisis, defied this belief. Félix Édouard Guérin-Méneville (quoted by de Ceris, 1873: 674), a prominent entomologist and a member of the Academy of Science argued:

> *This parasite is not the cause, but a consequence... its smallness, its hidden life, and its insignificance as a zoological species undistinguished among the innumerable species of the groups of parasites within which it belonged.*

This concept of structure justified the authority of scientific, bureaucratic and religious institutions over that of local practices and induction from empirical observation. Conversely, the Darwinists did not see hierarchical position as a factor in assigning responsibility or blame for the crisis. Instead they reversed the weight placed on these same values, and were therefore open to the possibility that the Phylloxera, despite its 'smallness' could be the cause. Gaston Bazille (1868: 522), a commercial viticulturist argued:

> *It is possible that the original lice did choose in preference a sick vine; however, once established, they have become in and of themselves, and independent of all other facts – cold, drought, impoverished soil, excesses of humidity – a cause, and unhappily a cause very actively withering and killing the remaining vines. The opinions of our adversaries don't explain at all the advancement of the disease, or the present state of the vineyards.*

Still, the Theists, reasoned that one's moral strength is determined by his/her adherence to moral hierarchy; they argued that it was 'lazy' agricultural practices that left the vines susceptible to parasites such as the Phylloxera. The Editor of the *Journal de Villefraiche* (quoted Garrier, 1984: 123) reported that:

> *It is believed that... the plague is a just punishment inflicted on the vignerons of the southern Rhône... for their bloated production.*

This concept of essence reinforced attitudes that those affected deserved punishment and were less worthy of assistance, thus justifying the ultimately ineffective policy of purification through the quarantine and elimination of diseased vines. As with other human and agricultural

epidemics, the initial response was quarantine. Local officials ordered that affected vineyards be identified, dug up and torched. Small viticulturists attempted to salvage some value by selling their dead vines as firewood, which helped the Phylloxera to spread by allowing it to drop from the dead vines onto yet unaffected vineyards (Stevenson, 1980). Some found that the prolonged flooding of a vineyard could drown the Phylloxera, an approach that required the use of large steam-driven pumps, teams of workers to build dykes around the vineyard, and was only suitable for vineyards on flat ground (Ordish, 1987). In addition, sulphur-based pesticides were highly flammable and only effective in certain soils (Campbell, 2004) and often toxic to adjacent fruit and vegetable crops (Simpson, 2011). Both immersion and pesticides were prohibitively costly for all but the wealthiest viticulturists, such as the owners of well-known properties in the Bordeaux and Burgundy (ibid), and was not a permanent cure as they required repeated annual treatment (Gale, 2011).

In contrast, the Darwinists reasoned that the ecosystem is dynamic and subject to constant change. Rather than attempting to control the Phylloxera through quarantine and eradication, they sought to understand the insect's lifecycle in order to develop a solution. Planchon (quoted in Cazalis, 1869: 238) advocated:

> *It is useless to look elsewhere for the cause, unhappily too evident, of the malady and the deaths....*
> *What is now necessary to find is no longer to find the cause of the malady, it is its remedy.*

Research by Riley eventually confirmed that the Phylloxera could live above and below ground, adapting to local conditions (Sorenson et al., 2008). In Europe, the Phylloxera seemed to live almost entirely below ground – leading to speculation that it multiplied through asexual reproduction (Campbell, 2004). The idea that Phylloxera could reproduce without a male counterpart was attacked by the Theists and especially the French Catholic Church (Ordish, 1987). Despite the failure of early attempts, the Theists continued to advocate eradication through pesticide treatment. Just as previous infestations were controlled through pesticides, the Imperial Minister of Agriculture, Clément Duvernois, pleaded for 'men of science' to find a solution and offered a reward of 20,000 Francs "to be awarded to the one who finds an effective and practical means of defeating the new disease known as the Phylloxera" (Duvernois, 1870, quoted in Campbell, 2004: 112).

The Darwinists reasoned along the concept of adaptation (i.e. species must adapt to changing conditions to survive). They eventually argued that the only practical way forward was to adapt the vine through approaches such as grafting the American Vitis on the rootstock of the European Vitis Vinifera. Planchon (1874, p.566) proposed:

Given the age-old existence of Phylloxera in the United States and the rapid death of European vines, it is clear that American vines possess the power to resist their secular enemy... they are generally sturdier than their civilised descendants. It is possible that a process of natural selection bit by bit eliminated those wild vines that could not fight the enemy insect in varying degree...

Meanwhile, the Theists conversely reasoned that eradication was the only solution, based on the concept of preservation. They viewed the American Vitis as 'impure', which would create "centaurs" and "chimeras" (Mudge, Janick, Scofield, & Goldschmidt, 2009) that would "taint pure French vines". The Country Life correspondent for *Le Temps* (de Cherville, 1878: 4) exhorted:

The fight must continue [with insecticide] and any recourse to America forsworn until, should it come, the very day of defeat... and we cannot entirely despair that... will not one day result in a practical and economic remedy that will save our French vines entire from the tip of their stems to the base of their roots...

This sentiment was shared by large commercial viticulturists, particularly those with prestigious properties in the Bordeaux and Burgundy, who sought to preserve the pedigree of their vines. In 1879, the Ministry of Agriculture exclusively sanctioned pesticide treatment, and prohibited imports of American Vitis, except to areas already completely destroyed by the Phylloxera. In areas dominated by small viticulturists such as the Burgundy, this led to conflict between local officials tasked with enforcing regulations and desperate family viticulturists who illicitly planted American Vitis rootstock to reconstitute their devastated vineyards (Gale, 2011).

Despite the vast commitment of resource, the Theists' policy of eradication failed to slow the advance of Phylloxera across France. The Superior Commission of the 1881 Phylloxera Congress in Bordeaux conducted a review of all available scientific papers, white papers and other field reports and concluded that apart from the experiments with grafted rootstock and hybrid vines, no other solution proved effective or economically viable (Phylloxera., 1883). Furthermore, wine tastings were demonstrating that wine from the fruit of grafted Vitis vinifera was indistinguishable from that of the 'pure' Vitis vinifera (Campbell, 2004). For reasons of taste and

authenticity however, the option of reconstitution through hybrid vitis-American vines found relatively little official support and was quickly ruled out (Ordish, 1987).

The Aftermath

Nearly a decade of intensive research was still required to develop new hybrid species of rootstock, that were tolerant of a broader range of soil and climate conditions, to enable the full reconstitution of all French viticultural regions (Paul, 1997). In 1887, the Ministry of Agriculture finally reversed the policy of eradication and began to subsidise the reconstitution of vineyards through American vitis rootstock grafts (Campbell, 2004). Although grafting practices were initially developed by small viticulturists in Burgundy, the large-scale commercial viticulturists, particularly those of the Bordeaux, finally committed to reconstitution by the 1890s (Simpson, 2011). The reconstitution effort precipitated a massive shift from traditional mixed crop farming. Growers unable or unwilling to reconstitute, abandoned viticulture for the intensive cultivation of fruits and vegetable crops, livestock and horticulture. Consolidation among remaining viticulturists drove the transformation of winemaking into one dominated by large-scale commercial viticulturists (Margadant, 1979).

Discussion

In our analysis of the Phylloxera Epidemic we examined the dynamic between ideology and moral reasoning, and how this dynamic informs how stakeholders understand and respond to an ecological crisis. Using the common conceptual metaphor of 'wine as a form of identity construction', our analysis revealed that, there were two distinct ideologies influencing the framing of, and response to, the crisis, namely, the Theists and Darwinists. We discussed the respective processes of moral reasoning of each of these ideologies, and showed that while drawing on the same conceptual metaphor, the two stakeholder groups prioritised different concepts to justify and legitimate actions relative to the Phylloxera Epidemic as the crisis unfolded.

The key contribution of this paper is to extend our current conceptualisations of how different groups frame a crisis based on their ideology, by emphasising the role of moral reasoning in this process. As we have seen in our analysis of the Phylloxera Epidemic, the Theists were ini-

tially found to ideologically resist acknowledging the agency of the Phylloxera. However, as time went by and the crisis unfolded to the point of completely destroying all vineyards and in extension a large part of the French economy, the Theists adjusted their frame regarding who and what possessed agency. The phylloxera was now reframed as possessing the capability to destroy one of France's main industries. It is only at the point where other approaches to eradicate the Phylloxera failed, that the Theists acknowledged the viability of reconstitution through the grafting of French vines on American rootstock. In this sense, they did not renounce their ideology, but rather, they re-positioned themselves against the crisis and the actions that needed to be taken by extending their frames to accept a previously unacceptable position. Indeed, the Theists were able to maintain their underlying ideology, while at the same time pragmatically changing their actions towards the crisis.

The Theists came to agree with the Darwinists on the solution to the crisis, not out of a master frame that reconciled both perspectives. Rather, key critical events in the crisis forced them to adjust their moral reasoning to reconcile their ideology with actions needed to sufficiently respond to the crisis. Initially, the Theists were found to reason that they needed to preserve the entire French vine (Vitis vinifera) from 'the tips to the roots' in order to save wine. As the crisis unfolded, the Theists eventually came to accept that the goodness of a vine should be evaluated by that part of the vine that is above the earth, with the rootstock now only a neutral conduit between the vine and its terroir. Furthermore, as the process of reconstitution entered the latter stages, the ability to choose between different courses of action increased as the crisis eased, which enabled a return to concepts of structure. Hierarchy would become the foregrounded concept and preservation was backgrounded as hybrids were outlawed and new classifications of regions and permissible species of vine and wine-making techniques were imposed through the AOC (Appellation d'Origine Contrôlée or controlled name of origin) system.

While intransigence is often dismissed as negative, we found that it played a generative role as it forced both sides to experiment with and develop their theories of causality and potential solutions. The Theists continued to develop their experiments to eradicate the insect through flooding, sand planting and pesticides. In particular, the pesticide approach evolved significantly

in terms of different formulations and application technologies. At the same time, the Darwinists used this period to identify and breed different rootstocks for grafting that were suitable for the varied climate and soil conditions across the viticultural regions of France. Scientists on both sides continued to develop, test and reject various hypotheses regarding the Phylloxera until an adequate understanding of its life cycle was achieved. Indeed, despite the emergence of grafting techniques among small Burgundy viniculturists in the 1870s, nearly a decade would be required to marshal the breadth and depth of national resources and capabilities before large-scale implementation of the reconstitution effort could begin. It was the time and space afforded by this intransigence that enabled a failing course of action to be abandoned in favour of a more sustainable trajectory out of crisis.

We now turn to the implications of these theoretical insights for organizational research in ecological crises.

Implications

Our research has implications for understanding debates around different crises by emphasising the process of moral reasoning in the instantiation of a group's ideology. Although Johnson's (1994) and Lakoff's (2002) work has already been applied in a variety of social and political studies to understand how different groups prioritise various concepts through their respective ideologies to frame political action (Edgell, 2012; Massengill, 2008; McAdams et al., 2008), the role of morality has been largely overlooked in organizational studies.

In particular, some research recognises the importance of morality for understanding organizational action, but without explicitly linking it to ideologies (Feldman & Feldman, 2006; Whittle & Mueller, 2012). In cases, where such an explicit link is provided, the focus is not on how moral reasoning mediates debates over a crisis, but rather on how morality can question conventional approaches to understanding power and dominance in organizational settings (Kirby & Harter, 2003; Marston, 2000). Further, some organizational research has examined the role of arguments for morality in rhetorical strategies of legitimation, whereby actors invoke emotive moral claims to appeal to human concerns (Erkama & Vaara, 2010; Vaara & Tienari, 2008), and to express emotion or 'move an audience' (Samra-Fredericks, 2004). While this research offers

insight into how moral claims can move communicative action, it has not offered deeper insight into the underlying process of moral reasoning.

Our research contributes to organizational studies by examining the dynamic between ideology and moral reasoning, and it informs how stakeholders understand and respond to an ecological crisis. As Johnson observed, 'Many of the most pressing moral debates, however, concern whether we should extend the scope of morality beyond our anthropocentric world to embrace other forms of life and even the ecosystem as a whole' (1994: 254). Our findings build upon these ideas about the link between moral reasoning and ecological sustainability by showing how ideologies tend to become more apparent when a crisis creates an imperative to choose between different courses of action. Crises often lead to the reawakening of inconsequential or dormant ideological divides, because actors must inevitably employ conceptual metaphors in their framing to take positions on these issues. Thereby, in extending Lakoff's (2002) work, we argued that, in times of crises, key critical events (Kieser, 1994) push actors to shift their frames while engaging in processes of moral reasoning. This has helped us to explain why, although ideology remains relatively stable, frames can shift as actors reason how to respond to a crisis.

Our study, therefore, responds to previous calls for the integration of history into organizational studies (Clark & Rowlinson, 2004; Kieser, 1994; Suddaby, Foster, & Mills, 2014; Wadhwani & Bucheli, 2014). As Clark and Rowlinson (2004) argue, most longitudinal research hinges on ahistorical assumptions about the universalism of human and organizational behaviour and a timeless present. In this study, we have moved the analysis beyond the boundaries of organizational studies' disciplinary orientations to consider the deeper theoretical and methodological issues that a call for historical research raises (Wadhwani & Bucheli, 2014). We exemplify the use of both recent histories and contemporaneous texts in the analysis of conceptual metaphors and framing across opposing stakeholder groups during a crisis.

Furthermore, we contribute to research on organizations and the natural environment (ONE) (Jermier & Forbes, 2011b; Kallio & Nordberg, 2006) by providing rich insights into historical studies of ecological crises. ONE scholars have repeatedly called for a less anthropocentric and more ecologically focused discourse with which to understand the relationship between

organizations and the natural environment (Hoffman, 1999; Jermier, Forbes, Benn, & Orsato, 2006; Shrivastava, 1994; Stead & Stead, 2009) and to consider how moral claims influence the actions of opposing stakeholder groups on the natural environment (Phillips & Reichart, 2000; Waddock, 2011). We respond by offering a fresh perspective on the effects of framing on sustainable development by placing emphasis on the process of moral reasoning, explaining how different frames get re-prioritised by opposing stakeholder groups at different points in time.

This is one of the first studies to explicitly offer an analysis of the moral reasoning of diverse stakeholder groups during a crisis, and how such reasoning contributes to frame shifting over key historical events. As we explore in our analysis of the Phylloxera Epidemic, it was the persuasive arguments of the Darwinists and the persistence of the phylloxera in resisting eradication efforts that eventually led to the Theists' re-prioritisation of key frames and their acceptance that the vines and the insect had to coexist. Our theoretical and methodological focus on key historical events and the conceptual metaphors used by different stakeholders to make sense and respond to the crisis has enabled a deeper analysis of the process of moral reasoning that influences the trajectory of a crisis. In particular, our theoretical and methodological focus has enabled a deeper understanding of how different stakeholders remain consistent with their ideology, yet able to flexibly shift their actions towards the crisis.

These theoretical contributions can be applied to the analyses of more recent crises such as HIV and the Ebola and Zika virus outbreaks (Leach et al., 2010). We can also approach the broader debate over whether human activity has detrimentally affected the climate through an analysis of the key frames being prioritised by opposing ideologies. The climate change debate is often centred on opposing frames. These include, the potential for losses in terms of economic competitiveness and the attendant affects upon employment and economic prosperity; flooded coastal cities and societal collapse; and equity in terms of the shared burden for sustainability measures between developing and developed economies (Heggelund, 2007; Leiserowitz, 2005). This has led to inevitable disputes over priorities for action (e.g. economic growth versus cutting carbon emissions) and thus intransigence and failure to achieve necessary consensus for attempts to implement broad multilateral agreements on reducing emissions of greenhouse gases such as

the Kyoto Protocol of 1997 (Nordhaus & Boyer, 1999). Within the context of such frames, local anecdotes that contradict assertions of global warming receive as much attention as comprehensive peer-reviewed analyses (Hulme, 2009).

As with the case of the Phylloxera Epidemic, this state of intransigence also offers the time and space for experimenting, developing and implementing prerequisite new technologies, policy mechanisms and business models. Furthermore, existing courses of action such as maintaining the status quo need to be cast into doubt and thus begin to lose their legitimacy. For example, media coverage of the inundation of New Orleans by Hurricane Katrina has had a role in reversing doubts over the veracity of climate change in American society (Boykoff, 2007; Giddens, 2009). Lakoff (2010) argues that the ongoing effort to reframe the issue of 'global warming' as 'climate change' has been a key factor in gaining bipartisan support for legislative moves to reduce greenhouse gas emissions among American Liberals and Conservatives (Kerry & Graham, 2009). New frames can be constructed through moral reasoning so as to accommodate those groups, who simply perceive weather and climate patterns as deviating from historical norms (i.e. whether hotter, colder or simply more extreme), and reconcile with those who view the climate getting progressively warmer. Such new frames can help create a 'bigger tent' that accommodates greater diversity in worldviews and makes collective action more likely.

Therefore, it is by understanding how the ideologies of opposing stakeholder groups are instantiated that a common ground can be found upon which solutions to a crisis can be enacted. Ultimately, any frame that enables us to regard our natural environment as merely a resources or means to an end is inferior to one that recognises the complexity interactions between organisms that comprise that ecosystem. As we have shown with the example of the Phylloxera Epidemic, crises can be mitigated and the worst consequences averted by eventual consensus through an adaptation of frames to reconcile deeply rooted ideological differences, which, as in the case of climate change, can threaten to lock us into unsustainable trajectories of development.

Figure 1a – Timeline of Crisis: Making sense of the epidemic

Darwinists
Disease as 'Cause'

Theists
Disease as 'Symptom'

1864 - Vines around Roquemaure begin to blacken and die.

1868 - Planchon and Lichenstein find insects on the roots of vines

1869 - Riley and Planchon confirm American and European insects are the same species.

Darwinists conclude insect is the 'cause' of the epidemic and begin research into its life cycle.

Planchon, Lichenstein, Darwin, Pasteur

Guérin-Méneville, Naudin, Signoret, Trimoulet

Theists conclude the the phylloxera is an 'effect' resulting from systemic factors and 'lazy' agricultural practices.

Affected viticulturalists agree and lobby the government to respond.

Small Growers

Ministry of Agriculture

Catholic Church

The Church and conservatives oppose the Darwinists theory of asexual reproduction.

The Ministry initially adopts a 'wait and see' policy

Threat of industry collapse and falling tax revenues prompts Ministry to begin to search for solutions directly targeting the insect.

1870 - Ministry of Agriculture offers a 30K Franc prize for an 'efficacious' cure.

1874 - Ministry of Agriculture increases prize for 'cure' to 300K Francs..

With theist explanations failing to explain the epidemic, Ministry begins shift to Darwinist informed approaches

1875 - Balbiani publishes 'Winter Egg' theory of sexual reproduction

1876 - Phylloxera Commission concludes insect is cause of epidemic

Figure 1b – Timeline of Crisis: Responding to the epidemic

Darwinists
Solution through adaptation

Theists
Solution through preservation

Local officials initially respond with quarantine (uprooting and burning vines)

Local
Officials

1868 - Reports of an epidemic in the Rhone begin to circulate.

Planchon and colleagues argue that with pesticide approaches failing the only viable solution must involve the American Vitis.

The Ministry's supports quarantine and later eradication with pesticides

Ministry of
Agriculture

Planchon,
Lichenstein,
Pasteur,
Riley

Dumas,
Cornu
Mouillefert

Despite lack of success, scientific establishment supports pesticide research.

1872 - Attempts to contain the epidemic by quarantine fail

By mid 1870s the merits of grafting techniques are popularised through exhibitions, articles and how-to-do pamphlets.

Small
Growers

Wealthy
Growers

Wealthy growers begin treating heavily in pesticide application.

Village co-ops are formed to reconstitute vineyards - over more easily and less effective insecticide approaches.

Catholic
Church

The Church and conservatives support eradication as means of preserving dominance of men and traditional French cultural purity.

1875 - Industrial scale production of insecticides begins.

Local officials shift support to reconstitution as eradication and quarantine prove futile.

1878 - Imports of American vine imports banned. Army called in to enforce insecticide treatments in Burgundy.

Increasing evidence that pesticides are dangerous, expensive and ineffective moves the Ministry to finally endorse reconstitution through American vines.

1879 - State licenced nurseries established in Midi to mass-produce rootstock and grafted vines.

1884 - Phylloxera Commission admits superiority of reconstitution over insecticides.

1890 - Large scale reconstitution begins in Burgundy and Bordeaux.

Table 1 – Key ideological differences

	Darwinists	Theists
Primary stake-holders	Initially a small group of scientists influenced by recent theories of Darwin, Lister, Pasteur, etc.; and small viticulturists centred in the Midi.	The Paris-based scientific establishment led by the Academy of France; the Ministry of Agriculture; the Catholic Church; and large viticulturists.
Common conceptual metaphor	**Wine as a form of identity construction**	
Variations of the common conceptual metaphor	**Wine as progression** Like culture and nationhood, wine emerges from complexity and thus must remain open to change and renewal.	**Wine as tradition** Wine is a manifestation of the purity and tradition of culture and nationhood and thus must remain resolutely French.
Concepts of structure	**Structure as eco-system** Humans (and the vine) are a species within a broader ecology. Interactions are manifold, complex and emergent, with each species occupying unique positions within a heterogeneous ecosystem.	**Structure as hierarchy** The world is a cosmic hierarchy (e.g. man under god, woman under man, man above nature, centre above periphery, French vines over others, etc.) whose moral rectitude determines one's authority and standing.
Concepts of essence	**Essence as adaptation** The ecosystem is dynamic and subject to constant change, with the imperative of survival determined by the extent of adaptation by a species to local selective environmental pressures. Adaptation is strength and maladaptation is weakness.	**Essence as rectitude** The world is divided into good and evil with entities having an essential character that determines their conduct. Good/evil is equated with moral strength/weakness. Strength is gained through self-discipline and restraint (i.e. being 'upright') while weakness comes from self-indulgence and laziness (i.e. 'falling' down' and thus vulnerable to evil.
Concepts of agency	**Agency as change** Survival depends on the ability to change to suit environmental contingencies. If the environment is beyond our control or comprehension, then we must address the problem by changing new practices for dysfunctional ones.	**Agency as preservation** Goodness is the preservation of the order and integrity of predetermined structures, while evil is the chaos and decay. Evil is fought through purification and exclusion to maintain these boundaries. If boundaries are not maintained, evil like disease, can spread.

Table 2 – Re-prioritising key frames in the crisis

	Darwinists	Theists
Initial frame	The interaction of species is complex, therefore the cause may be best determined through empirical observation of local phenomena and inductive reasoning. The insect is the cause, therefore we must directly target the insect.	A mere insect cannot be the cause of the blight. Provincial scientists cannot know better than the scientists of the capital. Lazy practices by the morally weak have 'enfeebled' the vines, making them susceptible to parasites and adverse climate.
Intermediate frame	The insect must be understood on equal terms (i.e. an anthropomorphic perpective). The nature and dynamic of the Phylloxera lifecycle can be better understood through the study of local context and interactions.	The insect is an evil over which man, if worthy, should eventually prevail (i.e. an anthropocentric perspective). It must be excluded (e.g. quarantines, import bans) and purged by all possible measures (e.g. flooding, fire, pesticides).
Final frame	Complete eradication of a well-adapted species such as the Phylloxera is neither practical nor possible. Growing practices and the vines themselves must be adapted to survive. French vines will be preserved through the adoption of American rootstock.	The insect is an evil that is kept at bay through the use of rootstocks to preserve the French vine. Hybrid vines and and fake wines however must be eliminated and the purity of traditional practices must be restored.

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